Montana Comprehensive Assessment System (MontCAS, Phase 2)

Criterion-Referenced Test (CRT)

Common Constructed-Response Item Release
Mathematics, Grade 8

2009

OPI

OFFICE OF PUBLIC INSTRUCTION

For information, contact Measured Progress, P.O. Box 1217, Dover, NH 03821-1217.
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Mathematics
Session 1 (No Calculator)

You may NOT use a calculator during this session.

Write your answer in the space provided for it in your Student Response Booklet. Show all of your work.

23. Sample 1 of a silver alloy weighs 100 ounces and contains 20% pure silver.

    a. How many **ounces** of pure silver does sample 1 contain?

    b. Sample 2 of a silver alloy weighs 320 ounces and is 75% pure silver. How many ounces of sample 2 are **not** pure silver?

    c. Sample 3 is made by combining 60 ounces of pure silver with sample 1. What is the **percent** of pure silver in sample 3? Show or explain how you found your answer.

Scoring Guide

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point or Student demonstrates minimal understanding of percents and/or proportions.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

Part a: 1 point — for correct answer, **20 (ounces)**

Part b: 1 point — for correct answer, **80 (ounces)**

Part c: 2 points — for correct answer, **50%**, with work or explanation given

OR

1 point — for correct answer, without appropriate work or explanation given
or
for correct strategy shown, for example, finds 80 ounces and 160 ounces

Sample Response:

a. 20% of 100 ounces is 20 ounces.

b. $\frac{1}{4} \times 320 = 80$

c. 20 ounces + 60 ounces = 80 ounces of silver. 100 + 60 = 160 ounces of sample. 80 ÷ 160 = 50%

Score Point 4

Sample 1

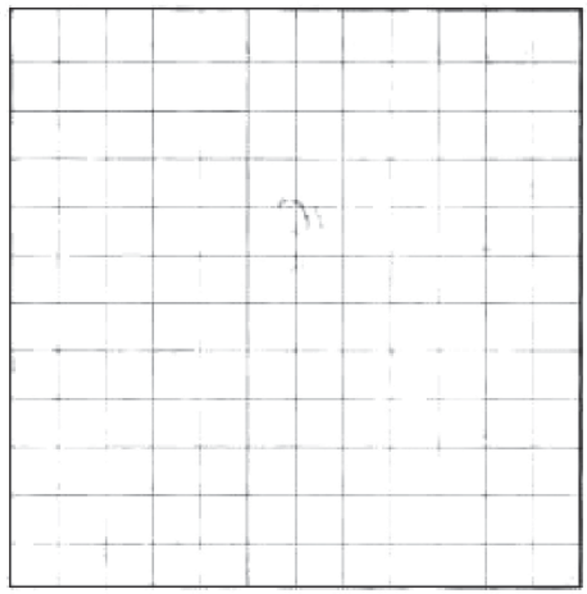
a. 100 × .2 = 20.0 — 20 ounces are pure silver

b. 320 × .75 = 1600, 22400, 240.00 — 320 − 240 = 80 — 80 ounces are not pure silver

c. 160 = 80 ounces of pure silver

3. 160 × .5 = 80.0 — 160 − 80 = 80

50% of sample 3 is pure silver



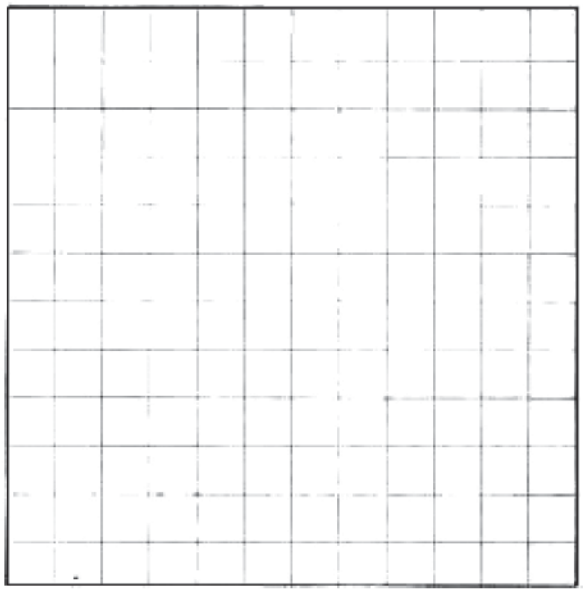
Score Point 4

Sample 2

a. 100
× 0.2
20.0
20 ounces

b. 320
× 0.25
1600
+ 6400
80.00
80 ounces

c. 20 ounces pure
+ 60 = 80 ounces pure
60 160 ounces total
100
$= \frac{1}{2}$
= 50% pure



Score Point 3

Sample 1

a = 100 ÷ .20 = 20 oz.

b = 320 ÷ .75 = 240 oz.

c. 160 oz

20 oz + 160 oz = 80 oz

a $\frac{x}{100} = \frac{20\%}{100}$ 20 • 100 = 2,000 ÷ 100 = **20 oz**

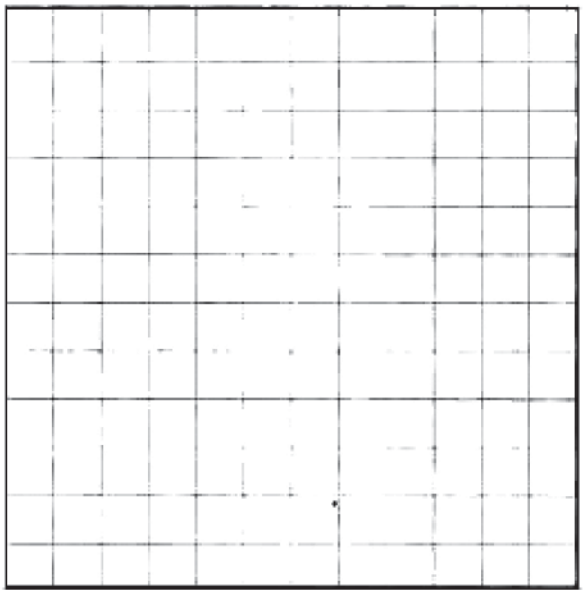
b. $\frac{x}{320} = \frac{25\%}{100}$ 320 • 25 =

320 × 25 = 1600 + 6400 = 8000

8,000 ÷ 100 = **80 oz**

c. 20 + 160 = 160 oz

80 oz pure silver / 160 oz



Score Point 3

Sample 2

(a) 20 ounces

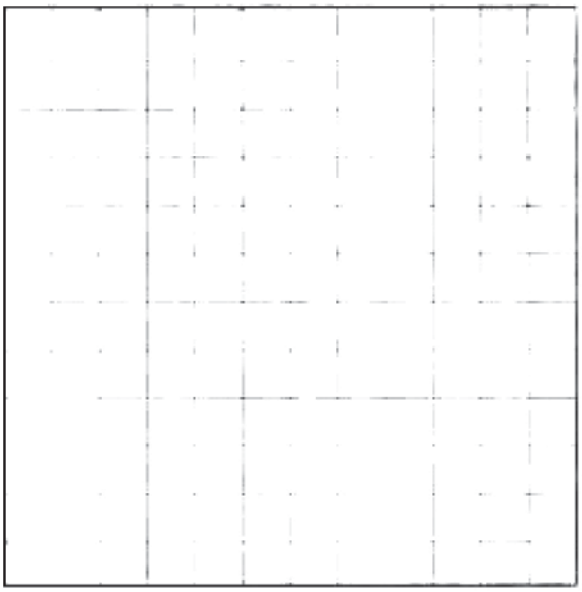
(b) 140 ounces

(c) 50 lbs

320
x .75
1600
22400
240.00

yo = $\frac{1}{2}$ of 16

2/160 ounces



Score Point 2

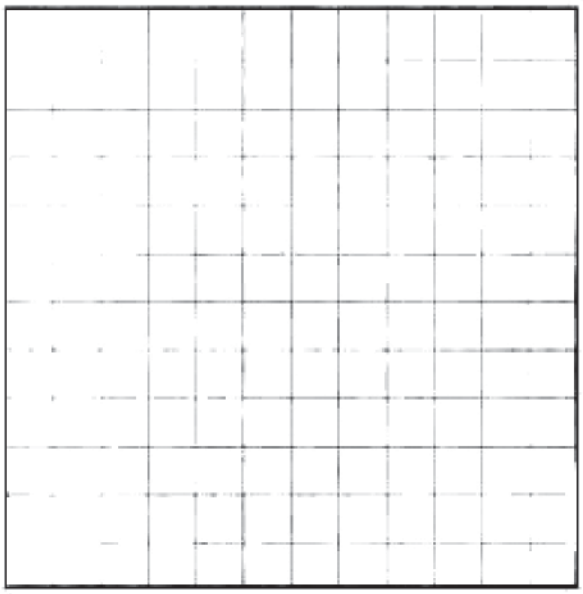
Sample 1

Sample 1 weighs 100 ounces & Contains 20% silver

a. Sample 1 Containes 20 ounces of pure silver because 20% of 100 is 20.

b. Sample 2 is 80 ounces are not pure silver
380 ÷ 2 = 160 ÷ 2 = 80 = 25%

C. Sample 3 would have 80 oz. of pure silver because #1 has 20 ounces plus 60 oz. from sample 3.



Score Point 2

Sample 2

a. Sample one contains 20 ounces of pure silver.

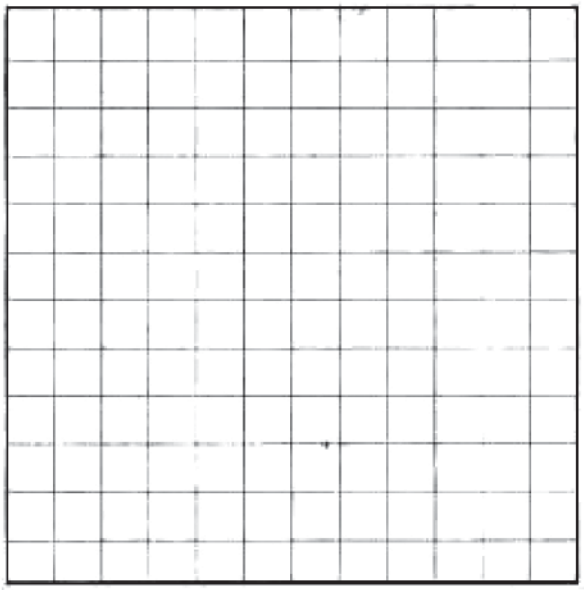
b. 80 ounces of silver alloy are not pure silver.

c. 80% is Pure Silver.

60 ounce
+ 20% of 100 = 20
80% of Pure Silver.

212
320
- 80
240

80
+ 80
80
80
320



Score Point 1

Sample 1

A-100 ounces and has 20% pure silver

20% = 1/5 (i converted the %)

1/5 of 1 = .2 (i used my fractions)

.5 ounces of pure silver

B- 75% = 3/4 (i used the four when i ÷) and the three when i multiplied

320 ÷ 4 = 80 x 3 = 240

320 - 240 = 80 ounces aren't pure silver

320

C- 60 ounces + 5 ounces = 65 ounces

65 ÷ 5 = 13

100 ÷ 5 = 20

13/20

Score Point 1

Sample 2

A] 100 ÷ .20

20 ounces

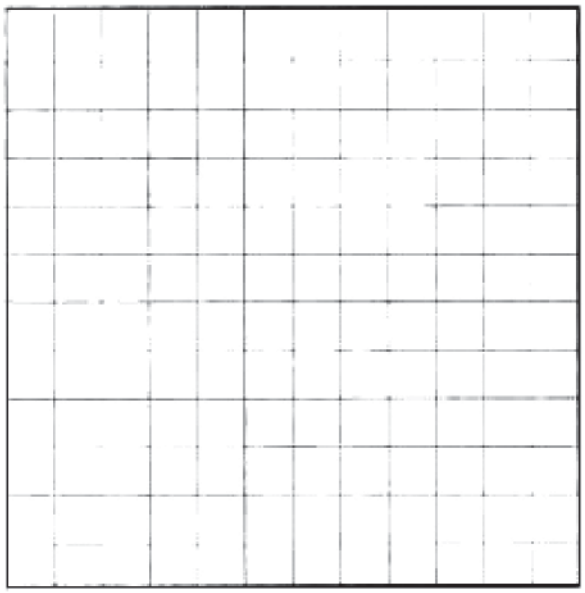
B] 320.00
× .75
1600.00
22400.00
24000.00

24 oz

C] 160 oz

60%
+20%

80%



Score Point 0

Sample 1

a: 2

B: 240

C. 100 + 60 = 160 oz • 52%. pure silver
5:7 + 5:3